



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,336	02/28/2002	Dieter Kerner	032301.606	5608

441 7590 03/22/2010
SMITH, GAMBRELL & RUSSELL
1130 CONNECTICUT AVENUE, N.W., SUITE 1130
WASHINGTON, DC 20036

EXAMINER

ZIMMER, MARC S

ART UNIT	PAPER NUMBER
----------	--------------

1796

MAIL DATE	DELIVERY MODE
-----------	---------------

03/22/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/084,336	Applicant(s) KERNER ET AL.	
	Examiner MARC S. ZIMMER	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period **will** apply and **will** expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply **will**, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 March 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7, 8 and 15-18 is/are rejected.
- 7) ☒ Claim(s) 13 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

The finality of the rejection is hereby withdrawn because the Examiner provides a modified rationale for rejection of claims 7 and 16 herein.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mangold et al., JP 2000-169132 in view of the teachings taken from Chapter 6 of the volume entitled *Handbook of Fillers, 2nd Edition* authored/edited by Wypych, Herzig, U.S. Patent # 4,101,499, Penneck, U.S. Patent # 4,001,128, and Cyprien Guy et al., U.S. Patent # 4,886,661 for the reasons espoused previously. See, for instance, the Examiner's August 25, 2006 correspondence.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hemme et al., U.S. patent Application Publication No. 2002/0018741 in view of the teachings taken from Chapter 6 of the volume entitled *Handbook of Fillers, 2nd Edition* authored/edited by Wypych, Herzig, U.S. Patent # 4,101,499, Penneck, U.S. Patent # 4,001,128, and Cyprien Guy et al., U.S. Patent # 4,886,661 for the reasons espoused previously.

Claims 7 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mangold et al., JP 2000-169132 in view of the teachings taken from Chapter 6 of

the volume entitled *Handbook of Fillers, 2nd Edition* authored/edited by Wypych, Herzig, U.S. Patent # 4,101,499, Penneck, U.S. Patent # 4,001,128, and Cyprien Guy et al., U.S. Patent # 4,886,661 as applied to claims 8 and 13-15 above and also in view of Lentz, U.S. Patent # 3,122,520, and Barthel et al, U.S. Patent # 5,851,715 and/or Kennan et al., U.S. Patent # 5,008,305.

Applicant points out, correctly, that Lentz does not contemplate the exclusion of oxygen when treating the oxides with a surface modification agent. However, a quick survey of the prior art indicates that it is known to purge the system with an inert gas such as nitrogen to preclude the possible ignition/explosion of the reaction mixture. See column 8, lines 22-27 of Barthel and column 8, lines 14-25 of Kennan.

As for conditions required by claim 7, the skilled artisan is fully capable of determining an appropriate temperature and period of time over which to conduct the treating reaction as a matter of routine experimentation. Moreover, similar conditions are already disclosed in the prior art in the context of treating silica with an organosilicon compound. See column 3, lines 51-62 of Kobayashi et al., U.S. Patent # 4,849,022. (This passage actually advocates a shorter reaction time but, again, the skilled artisan would understand that longer reaction times are reasonable depending on system considerations including the concentration of the reactants.)

Claims 8, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mangold et al. (US Pat. 6,328,944) in view of the teachings taken from Chapter 6 of the volume entitled *Handbook of Fillers, 2nd Edition* authored/edited by Wypych,

Herzig, U.S. Patent # 4,101,499, Penneck, U.S. Patent # 4,001,128, and Cyprien Guy et al., U.S. Patent # 4,886,661 for the reasons outlined in the December 23, 2009 Office communication.

Claims 7, 16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mangold et al. (US Pat. 6,328,944), Chapter 6 of the volume entitled *Handbook of Fillers*, 2nd Edition authored/edited by Wypych, Herzig, U.S. Patent # 4,101,499, Penneck, U.S. Patent # 4,001,128, and Cyprien Guy et al., U.S. Patent # 4,886,661 as applied to claims 15 and 17 above, and also in view of Lentz, U.S. Patent # 3,122,520, and Barthel et al, U.S. Patent # 5,851,715 and/or Kennan et al., U.S. Patent # 5,008,305.

The relevant teachings of Mangold, Wypych, Penneck, Cyprien Guy, and Lentz have been described previously. It is conceded that Lentz fails to mention carrying out the organosilicon treatment in an inert (oxygen free) environment. However, a quick survey of the prior art indicates that it is known to purge the system with an inert gas such as nitrogen to preclude the possible ignition/explosion of the reaction mixture. See column 8, lines 22-27 of Barthel and column 8, lines 14-25 of Kennan.

As for conditions required by claim 7, the skilled artisan is fully capable of determining an appropriate temperature and period of time over which to conduct the treating reaction as a matter of routine experimentation. Moreover, similar conditions are already disclosed in the prior art in the context of treating silica with an organosilicon compound. See column 3, lines 51-62 of Kobayashi et al., U.S. Patent # 4,849,022.

(This passage actually advocates a shorter reaction time but, again, the skilled artisan would understand that longer reaction times are reasonable depending on system considerations including the concentration of the reactants.)

Response to Arguments

Once again, Applicant attempts to focus the discussion on the fact that a preferred use of the metal-doped silicon oxide of the prior art is in the formulation of inks where the host medium is polar and, thus, the aforementioned oxide is desirably hydrophilic. Where the filler is employed in this capacity, and the medium into which the oxide is dispersed is polar (and more particularly water), the Examiner concurs that it would be advantageous for the filler to possess a hydrophilic surface.

However, there are numerous other applications contemplated for the oxides described by both of the Mangold references including their incorporation into polymers as fillers. In this connection, the modification of oxidic particle surfaces, most often with organosilicon compounds, to make them more compatible in a less polar, more hydrophobic polymer host is practiced so ubiquitously as to be mentioned in perhaps tens of thousands of documents in the patent literature. Applicant argues that, to the extent that the primary references do not recognize the benefits associated with imparting a hydrophobic surface unto the oxide particles, the Examiner has relied on Applicants' Specification to reconstruct their invention using improper hindsight.

However, the reason why providing the oxide filler with a hydrophobic surface is not addressed is due to the fact that their insertion into polymer matrices as fillers represents only one of numerous potential applications, and admittedly not one that is particularly emphasized. In those instances where the metal-doped silicon oxide particles are blended with a polymer, the preponderance of evidence illustrates that it is beneficial to modify their surfaces with an organosilicon compound.

Applicant has confronted the Examiner repeatedly with this same line of argument and the Examiner has refuted their contentions with equal frequency. Their position ignores the fact that, in addition to being a useful component of ink compositions, there is also mentioned the utility of the doped oxides as a filler material for polymer compositions. Applicant might consider arguing the patentability of the claims on different grounds as the Examiner remains skeptical of the utility of this approach.

Applicants' Rule 132 Declaration does not serve to establish the superiority of HMDS, octyltrimethoxysilane, PDMA, or aminopropyltriethoxysilane over any other organosilicon compounds known in the art for treating oxide fillers. Applicant was invited previously- see the August 5, 2008 communication- to show that the properties of polymer blends into which metal-doped oxides treated with these particular compounds are better than analogous compositions wherein different organosilicon treatments agents were employed but has apparently declined this opportunity.

Concerning the dopant, both references anticipate one or more of the dopants set out in claims 16-18 and, thus, a Rule 132 declaration showing an unexpected result associated with this aspect of the invention would have been ineffectual. In arguendo, the Examiner has reviewed the contents of the Declaration filed May 26, 2005 and found no data establishing any advantages connected to the use of potassium as a dopant.

At the bottom of page 6 of their arguments, Applicant alleges that, insofar as the references relied upon by the Examiner to show that the benefits of filler treatment deemed unexpected are not, in fact, unexpected do not teach doped, pyrogenically-produced oxides, it is not clear how their teachings could be extended to the claims under consideration. It will first be pointed out that silicon oxide is the first oxide claimed and is the one exemplified in all the examples of the instant Specification. The term "doped", it will be appreciated by the skilled artisan, means that small quantities of a metal other than silicon are added *as an oxide* (see Applicants' arguments at page 5, lines 1-3). That is, doping will serve to introduce dopant metal atoms into the Si-O-S oxygen continuum of silicon but will not have a profound effect on the hydrophilicity and polar nature inherent in the surfaces of silicon oxide particles. Also, while it is conceded that there is no indication that the oxide samples of the prior art are pyrogenically-produced, these attributes (hydrophilic/polar surfaces) are shared by all oxides irrespective of the manner in which they are synthesized. To reiterate, it is precisely these properties that make metal oxides incompatible with polymer hosts leading to their self-aggregation and the corresponding decline in any number of properties.

Concerning method claims 7 and 16, the Examiner acknowledges a couple of deficiencies in the previous rejection and has amended his rejection accordingly.

Allowable Subject Matter

Claims 13 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Schutte et al., U.S. Patent # 3,924,029 is of interest for its description of a treatment method much like that disclosed in Lentz.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARC S. ZIMMER whose telephone number is (571)272-1096. The examiner can normally be reached on Monday-Friday 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jim Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1796

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

March 16, 2010

/Marc S. Zimmer/
Primary Examiner, Art Unit 1796